DECLARATION

I, Yukio SHINDO , a national of Japan, c/o Asamura Patent Office of 331-340, New Ohtemachi Building, 2-1, Ohtemachi-2-chome, Chiyoda-ku, Tokyo, Japan do hereby solemnly and sincerely declare:-

1) THAT I am well acquainted with the Japanese language and English language, and

2) THAT the attached is a full, true, accurate and faithful translation into the English language made by me of Japanese Patent Application No. 2000-120886

The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001, of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed this 24th day of December , 2004 .

Yukio Shindo

Yukio SHINDO

2000-120886

[Title of Document] Patent Application

[Reference Number] KN1109

[Date of Submission] April 21, 2000

[Addressee] Commissioner
The Patent Office

[International Patent Classification] G06K 9/20

[Inventor]

[Address] c/o Joho Kiki Jigyobu, HITACHI, LTD., 1, Haruokacho Ikegami, Owariasahi-shi, Japan.

[Name] Akihiro KAWAOKA

[Inventor]

[Address] c/o Joho Kiki Jigyobu, HITACHI, LTD., 1, Haruokacho Ikegami, Owariasahi-shi, Japan.

[Name] Tetsuo MACHIDA

[Inventor]

[Address] c/o Joho Kiki Jigyobu, HITACHI, LTD., 1, Haruokacho Ikegami, Owariasahi-shi, Japan.

[Name] Tetsuro KIYOMATSU

[Inventor]

[Address] c/o Joho Kiki Jigyobu, HITACHI, LTD., 1, Haruokacho Ikegami, Owariasahi-shi, Japan.

[Name] Toshinori KAJIURA

[Applicant]

[Applicant's ID Number] 0 0 0 0 0 5 1 0 8

[Name] HITACHI, LTD.

[Agent]

[Agent's ID Number] 1 0 0 0 7 8 1 3 4

[Patent Attorney]

[Name] Kenjiro TAKE

[Telephone] 03-3591-8550

[Indication on Fee]

[Prepayment Register Number] 006770

[Amount of Payment] ¥21,000-

[List of Items Filed]

[Title of Article] Specification 1

[Title of Article] Drawings 1

[Title of Article] Abstract 1

[Proof: Required or not] Yes

[Title of Document] Specification

[Title of the Invention] SHEET IMAGE PROCESSING SYSTEM

[Scope of Claim for a Patent]

[Claim 1] A sheet image processing system comprising:

a sheet definition data managing apparatus including a sheet definition data generating apparatus for generating sheet definition data representative of a relation between a sheet writing position and written data and a charge managing apparatus for claiming a charge in accordance with a use degree of said sheet definition data by a sheet recognizing and processing apparatus which will be described later;

a sheet recognizing apparatus for acquiring image information of a sheet and said sheet definition data and recognizing the type of said sheet by referring to said acquired information; and

a communication network for connection said sheet recognizing apparatus and said sheet definition data managing apparatus to each other.

[Claim 2] A sheet image processing system according to Claim 1, wherein said sheet image processing system stores image information of a sheet whose type is unrecognizable by referring to said acquired information.

[Claim 3] A sheet image processing system according to Claim 2, wherein said stored image information of

said sheet is transmitted to said sheet definition data managing apparatus.

[Claim 4] A sheet image processing system according to any one of Claims 1 through 3, wherein said sheet definition data managing apparatus includes a sheet definition data verifying apparatus for comparing said generated sheet definition data and a known image information of a sheet with each other and verifying whether said generated sheet definition data is correct or not.

[Claim 5] A computer-readable recording medium including a program to be implemented by a computer, said program including the steps of:

acquiring sheet definition data representative of a relation between a sheet writing position and written data by referring to acquired image data of a sheet;

transmitting said acquired sheet definition data to a sheet recognizing apparatus via a communication network;

claiming a charge in accordance with a number of times of using said sheet definition data and executing a sheet recognizing process by a sheet recognizing and processing apparatus (charging step); and

collecting image information of a sheet unrecognizable even if said sheet recognizing and processing apparatus uses said sheet definition data to

recognize said sheet.

[Detailed Description of the Invention]

[0001]

[Technical Field Pertinent to the Invention]

The present invention relates to a sheet image processing system and particularly to a sheet image processing system for recognizing the type of a sheet from acquired image data in accordance with sheet definition data stored in advance.

[0002]

[Prior Art]

The format of a sheet such as a bill for public utilities charges or a statement of payment for taxes is defined by and changes with each business company or each local government. There are therefore several thousands types of sheet formats in the nation.

[0003]

In order to realize efficient business management, financial agencies such as banks handling such sheets introduce an image processing system to process sheets. In a sheet image process, a database storing definition data for defining the types of sheets is prepared and the type of each sheet is automatically distinguished by referring to the database.

[0004]

[Problems to be solved by the Invention]

For sheet image processing, definition data

and the like for defining types of sheets are prepared separately and the type of each sheet is distinguished by using a database which stores the data. However, since there are a large number of sheet format types as described earlier, it is practically difficult to store definition data of all sheets. If the format of a sheet is changed or a sheet very similar to an already existing sheet appears, it is necessary to change the definition data. It is therefore necessary to add or modify the database.

[0005]

It takes a labor to store the definition data or modify the stored data in the database. Initial investment in configuring the database and maintenance cost become high. Furthermore, it is important to quickly collect the formats of currently circulating sheets and reflect them upon the database so that there is no sheet format which cannot be distinguished by using the current database.

[0006]

The present invention has been made to solve the above-described problems etc. and provides a sheet image processing system with reduced database configuring and maintenance costs.

[0007]

[Means for Solving Problem]

In order to solve the above-described problems, the invention uses the following means.

[0008]

There are provided: a sheet definition data managing apparatus including a sheet definition data generating apparatus for generating sheet definition data representative of a relation between a sheet writing position and written data and a charge managing apparatus for claiming a charge in accordance with a use degree of the sheet definition data by a sheet recognizing and processing apparatus; a communication network for transmitting the sheet definition data managed by the sheet definition data managing apparatus to the sheet recognizing and processing apparatus; and a sheet recognizing apparatus for recognizing the type of the sheet by referring to the sheet definition data acquired via the communication network. The sheet image processing system stores image data of a sheet whose type cannot be distinguished by using the acquired information, and can transmit the stored image data to the sheet definition data managing apparatus.

[0009]

[Mode for Carrying Out the Invention]

An embodiment of the invention will be described below with reference to Figs. 1 to 16. Fig. 1 is a diagram showing a sheet image processing system according to the embodiment of the invention. In the drawing, reference numeral 100 represents a sheet definition data managing apparatus which generates sheet definition data representative of a relation between a

sheet writing position and written data and which manages the generated sheet definition data. Reference numeral 200 represents a sheet recognizing apparatus which acquires the sheet definition data from the sheet definition data managing apparatus 100 and which distinguishes the type of a sheet read with an image scanner or the like in accordance with the acquired sheet definition data.

[0010]

Reference numeral 101 represents a sheet defining terminal by which an operator enters image data of a sheet or sheet definition data while looking at the sheet. Reference numeral 102 represents a sheet definition data verifying terminal for verifying whether the input sheet definition data is correct or not. Reference numeral 103 represents a sheet image server which stores sheet image data in a sheet image database 104 and manages it. The sheet image data is read with an image scanner 105 or acquired from the sheet recognizing apparatus 200 via networks 10 and 11. Reference numeral 104 represents a sheet image database which stores sheet image data. Reference numeral 105 represents a scanner. Reference numeral 106 represents a sheet definition data managing server which stores the sheet definition data input from the sheet defining terminal 101 in a sheet definition database (master) 107 and manages the stored data. The data stored in the sheet definition database 107 is edited for each sheet

recognizing apparatus 200 and supplied to the sheet recognizing apparatus 200. Reference numeral 111 represents a charge information managing server which claims a charge in accordance with the number of use times of the sheet definition data by each sheet recognizing apparatus 200.

[0011]

Reference numeral 201 represents a recognizing server which distinguishes the type of a sheet acquired through an image scanner 204 in accordance with the sheet definition data acquired from the sheet definition data managing server 100. Reference numeral 202 represents a sheet definition database (individual database) which is provided for each sheet recognizing apparatus 200 and which stores the individual sheet definition data acquired from the sheet definition data managing server 100. Reference numeral 203 represents a sheet image processing terminal which transmits image data of a sheet acquired by the image scanner 204 to the recognizing server 201 via the network 12. The sheet image processing terminal 203 has an application program which provides various services such as a municipal tax paying process. Reference numeral 204 represents an image scanner. Reference numeral 210 represents an unrecognizable image file storing image data of a sheet which the sheet recognizing server 201 cannot distinguish even if the sheet definition data is utilized. The sheet recognizing server 201 manages the

sheet definition database 202 and unrecognizable image file 210. The recognizing server 201 also counts the number of use times of the sheet definition data stored in the sheet definition database 202 and transmits the number of use times to a charge information managing server 111.

[0012]

Fig. 2 is a diagram showing examples of a sheet to be processed by the sheet image processing system. In the drawing, reference numeral 300 represents a OO city individual municipal tax payment sheet and reference numeral 350 represents a ΔΔ city individual municipal tax payment sheet. As shown in the drawing, although the sheets of two cities resemble closely, the city names are different and the positions and the like of a municipal code frame, an account number frame, an account number frame, and a subscriber name frame are also different.

[0013]

Fig. 3 is a diagram showing the data (characteristic field data) which is representative of characteristic fields and necessary for distinguishing between sheets shown in Fig. 2.

[0014]

Fig. 4 is a diagram showing the data (layout definition data) for defining the characteristic fields shown in Fig. 3. The sheet recognizing apparatus 200 distinguishes the type of a sheet, e.g., a sheet ID, by

referring to the data. In the drawings, reference numeral 410 represents layout definition data defining the characteristic field in the OO city individual municipal tax payment sheet shown in Fig. 2. Of the layout definition data, "sheet ID" is a unique number assigned to the "OO city individual municipal tax payment sheet". "Size" defines the size of the whole sheet. In this example, the unit is 1/10 mm. "Character 1" represents characters "OO city individual municipal tax" 310 shown in Fig. 3 and defines a distance from an origin (upper left) and a character string. "Rectangle 1" represents a rectangle 311 shown in Fig. 3 and defines a start position and an end position as distances from the origin. "Rectangle 2" represents a rectangle 312 shown in Fig. 3 and defines a start position and an end position as distances from the origin. "Continuous rectangle 1" represents a continuous rectangle 313 shown in Fig. 3, defines a start position as a distance from the origin, and defines the number of continuous rectangles and the size of one rectangle. Reference numeral 460 represents layout definition data which defines the characteristic field in the ΔΔ city individual municipal tax payment sheet shown in Fig. 2, and which is structured in a manner similar to the layout definition data for defining the characteristic fields in the OO city individual municipal tax payment sheet.

[0015]

Fig. 5 shows fields of the sheets required by an application program. The example on the upper side shows fields 320 to 323 in the "OO city individual municipal tax payment sheet" required by the application program, and the example on the lower side shows fields 361 to 363 in the "ΔΔ city individual municipal tax payment sheet" required by the application program. The application program runs on the sheet image processing terminal 203 and provides services such as a municipal tax paying process.

[0016]

Fig. 6 is a diagram showing data (format definition data) for defining the fields shown in Fig. 5 required by the application program. The sheet recognizing apparatus 200 recognizes the information written in each field of a sheet by referring to the data. In the drawing, reference numeral 420 represents format definition data of the OO city individual municipal tax payment sheet shown in Fig. 2. In the drawing, "Field 1" represents the "account number" 320 shown in Fig. 5 and defines an attribute, a frame type, a start position, a frame size, and a font type. "Field 2" represents the "designation number" 321 shown in Fig. 5 and defines an attribute, a frame type, a start position, a frame size, and a font type. "Field 3" represents the "amount of money" 322 shown in Fig. 5 and defines an attribute, a frame type, a start position, a frame size, a font type and the number of characters.

"Field 4" represents the "address name" 323 shown in Fig. 5 and defines an attribute, a frame type, a start position, a frame size, a font type and the start and end positions of pre-print to be deleted. Reference numeral 470 represents the format definition data of the ΔΔ city individual municipal tax payment sheet shown in Fig. 2, and is structured in a manner similar to the format definition data of the OO city individual municipal tax payment sheet.

[0017]

It is desired that the format definition data define all fields regarded as being necessary in order to allow various application programs to share the format definition data. A plurality of sets of definition data may be prepared for one sheet. Although the layout definition data and format definition data are supplied separately as the definition data, they may be supplied integrally.

[0018]

Fig. 7 is a diagram showing a character recognizing and confirming screen displayed on the sheet image processing terminal 203. A user corrects the character recognition results of the image scanner 204 while displaying this screen on the sheet image processing terminal 203. In the drawing, in the upper area for each item, cut-out image data is displayed, and in the lower area for the item, the recognition result is displayed. The operator compares the data in both

the areas and can correct the data. "?" in the "designation No" field indicates an unrecognizable character.

[0019]

Fig. 8 is a diagram illustrating a sheet recognizing process to be executed by the sheet image processing system. In the drawing, numerals surrounded with circles represent an example of the sequence of Steps of the process. First, at Step 1, the sheet definition data shown in Fig. 4 or 6 is generated to configure the sheet definition database 107. At Step 2, a use contract of the sheet definition database (e.g., use charge per use time of the sheet definition data: 10 Yen/one use) is made between the sheet recognizing apparatus 200 side and the sheet definition data managing apparatus 100 side. At Step 3, the sheet definition data managing apparatus 100 configures a sheet definition database (individual database) storing sheet definition data satisfying the requirements of the sheet recognizing apparatus 200 side and transmits the database to the sheet recognizing apparatus 200. At Step 4, by using the received sheet definition database (individual database), the sheet recognizing apparatus 200 performs image processing of the image data of a sheet read with the image scanner 204 to distinguish the type of the sheet. In this case, a charge process is performed in accordance with the number of use times of the sheet definition data so that charge information is

stored. The image data of a sheet whose type cannot be recognized by using the sheet definition database (individual database) is stored in the unrecognizable image file 210. At Step 5, the sheet definition data managing apparatus 100 acquires the image file stored in the unrecognizable image file 210, and generates sheet definition data in accordance with the image file to supplement or update the sheet definition database. At Step 6, the sheet definition data managing apparatus 100 acquires and sums up the charge information from the sheet recognizing apparatus 200. At Step 7, in accordance with the summed-up result, a use charge is claimed to the sheet definition data managing apparatus 100 side. At Step 8, the sheet recognizing apparatus 200 side pays the claimed charge.

[0020]

Fig. 9 is a flow chart illustrating the function of the sheet image managing server 103. First, at Step 501, image data of a sheet is stored in a temporary file 111, the image data of the sheet being acquired by the image scanner 105 or acquired from the unrecognizable image file 210 via the network 10. At Step 502, the image data is read from the temporary file 111 and displayed on the display screen of the sheet image managing server 103. At Step 503, by using an input device of the sheet image managing server 103, sheets are classified into categories as viewed from various viewpoints, by using information necessary for

the sheet recognizing process such as taxes, public utilities charges, and municipal names, and information such as the name of a category, a sheet name, a sheet acquisition date and acquisition source information is entered. At Step 504, such information necessary for the sheet recognizing process together with the image data is stored in the sheet image database 104. Step 501, and Steps 502 to 504 may be executed in parallel as independent processes.

[0021]

Fig. 10 is a flow chart illustrating the process to be executed by the sheet defining terminal 101. At Step 511, sheet image data is read from the sheet image database 104. At Step 512, it is checked whether an instruction of an operator is new generation of sheet definition data or modification thereof. In the case of the modification, the flow advances to Step 513, whereas in the case of the new generation, the flow advances to Step 514. At Step 513, the definition data corresponding to the read image data is read from the sheet definition database 107. At Step 514, the sheet image data is read by utilizing line segment recognition techniques or the like, and by referring to the data, a portion of the sheet definition data is automatically generated. At Step 515, the sheet image data and generated or read sheet definition data are displayed. At Step 516, the sheet definition data is input or edited by using the input device of the sheet defining

terminal. At Step 517, the sheet definition data is stored in the sheet definition database 107. The judgement at Step 512 may be executed first, and if the operator instruction is for modification, the process at Step 513 can be executed before the process at Step 511.

[0022]

Fig. 11 is a flow chart illustrating the process to be executed by the sheet definition data verifying terminal 102. First, at Step 531, sheet definition data to be verified is read from the sheet definition database 107. At Step 532, image data is sequentially read from the sheet image database to execute a sheet recognizing process by using the sheet definition data. At Step 533, the obtained process results are displayed. Whether the process results are correct or not can be judged by the operator. Whether the process results are correct or not may be automatically judged by using a program which uses stored correct data to compare sequentially read sheet image data with the correct data. If it is judged that the results are not correct, the sheet definition data input process shown in Fig. 10 is performed again.

[0023]

Fig. 12 is a diagram showing a sheet management table stored in the sheet definition data managing server 106. The sheet managing server 106 has a sheet management table 450 shown in the drawing which table stores sheet definition data classified into each

category. By referring to this management table, the sheet managing server 106 determines that the sheet definition data belonging to which category is supplied to each sheet recognizing apparatus 200. In the drawing, a O symbol indicates supply with a charge, a Δ symbol indicates supply without any charge, and no symbol indicates not yet supply. An initial registration date of sheet definition data and data necessary for management such as change history may also be stored.

[0024]

Fig. 13 is a diagram showing a charge table. The charge table 470 stores sheet definition data represented by the sheet ID and the number of use times of each set of the sheet definition data. In addition to the number of use times, the amount of use charge may also be stored.

[0025]

Fig. 14 is a diagram showing the management tables of the charge information managing server 111. In the drawing, reference numeral 610 represents a summing-up charge information table storing the number of use times by each sheet recognizing apparatus, and reference numeral 611 represents a summed-up charge information table used for managing the claimed charge amount of each sheet recognizing apparatus. The summing-up charge information table 610 and summed-up charge information table 611 may be formed in unison.

These tables may also be integrally formed with the management table of the sheet definition data managing server 106.

[0026]

Fig. 15 is a flow chart illustrating the process to be executed by the charge information managing server 111. First, at the predetermined date and time (e.g., in the first day of each month at 0 o'clock a.m.), the charge information managing server 111 refers to the charge table 470 shown in Fig. 13 and stored in the sheet recognizing apparatus 200 via the network 10, acquires data of the number of use times stored in the charge table, and writes the acquired data in the summing-up charge information table 610. The sheet recognizing apparatus 200 may transmit the data of the number of use times stored in the charge table to the charge information managing server 111. At Step 552, by referring to the summing-up charge information table 610 storing the data of the number of use times and the sheet definition database 107, the charge information managing server 111 calculates the use charge of each sheet recognizing apparatus 200 and stores the calculation results in the summed-up charge information table 611. At Step 553, the use charge is claimed to the sheet recognizing apparatus 200, for example, via the network 10.

[0027]

Fig. 16 is a flow chart illustrating the

process to be executed by the recognizing server 201. First, at Step 541, sheet image data is acquired from the sheet image processing terminal 203. At Step 542, sheet definition data is sequentially read from the sheet definition database (individual database) 202, and by referring to the sheet layout information in the sheet definition data, a recognizing process is performed for the sheet read from the sheet image processing terminal 203. At Step 543, it is judged whether the layout definition data and the format definition data of the sheet are recognizable. If they are recognizable, the flow advances to Step 544, whereas if they are unrecognizable, the flow skips to Step 547. At Step 544, by referring to the sheet format definition data in the sheet definition data, an image of each field is cut out to perform a sheet recognizing process. At Step 545, the counted number of use times of the sheet definition data is incremented by "1". At Step 547, the unrecognizable sheet image data is stored in the unrecognizable image file 210. At Step 548, the recognition results of the sheet image are transmitted to the sheet image processing terminal 203.

[0028]

Although it is judged at Step 543 whether the layout definition data and the format definition data of the sheet are recognizable, whether the layout definition data of the sheet is recognizable and whether the format definition data of the sheet is recognizable

may be performed at different Steps, respectively.

[0029]

The foregoing description has shown the example in which the sheet definition data is transmitted from the sheet definition data managing apparatus 100 to the sheet recognizing apparatus 200, and the recognizing server on the side of the sheet recognizing apparatus 200 executes a process of recognizing the type of a sheet. The recognizing server may be provided on the side of the sheet definition data managing apparatus 100. Namely, the recognizing server recognizes the type of a sheet after receiving the sheet image data to be recognized from the sheet recognizing apparatus without transmitting the sheet definition data to the sheet recognizing apparatus 200. Each of the sheet definition data managing apparatus 100 and the sheet recognizing apparatus 200 may be realized by using a single computer. In some case, the sheet recognizing program on the sheet recognizing apparatus 200 side is required to be updated depending upon the system configuration order, for example, if the sheet definition database managing apparatus 100 having the database of the embodiment is to be operated under the conditions that the sheet recognizing apparatus 200 is already operating by using another database. On this occasion, if it is difficult to perform the updating, a data format conversion function is built in the sheet definition data managing apparatus 100 or sheet

recognizing apparatus 200.

[0030]

As described above, according to the embodiment, for example, the sheet definition data managing apparatus can supply the sheet recognizing apparatus with sheet definition data, and the sheet recognizing apparatus recognizes the type of a read sheet in accordance with the supplied sheet definition data. Accordingly, the initial configuration cost of the sheet definition database can be reduced and use of the database can be promoted. The recognizing server collects unrecognizable sheet image data and transmits it to the sheet definition database to reflect it upon the sheet definition database. It is therefore easy to make the sheet definition database full of information.

[0031]

[Effects of the Invention]

As described above, according to the invention, the sheet definition data stored in the sheet definition data managing apparatus is supplied to the sheet recognizing apparatus when necessary. It is therefore possible to reduce the configuration cost of the sheet definition database and promote use of the database.

[Brief Description of Drawings]

[Fig. 1]

A diagram showing a sheet image processing

system according to an embodiment of the invention.

[Fig. 2]

A diagram showing examples of a sheet to be processed.

[Fig. 3]

A diagram showing data which is representative of characteristic fields and necessary for distinguishing between sheets.

[Fig. 4]

A diagram showing data for defining characteristic fields.

[Fig. 5]

A diagram showing fields required by an application program.

[Fig. 6]

A diagram showing data which defines fields required by the application program.

[Fig. 7]

A diagram showing a character recognizing and confirming screen.

[Fig. 8]

A diagram illustrating a sheet recognizing process to be executed by a sheet image processing system.

[Fig. 9]

A flow chart illustrating a process to be executed by a sheet image managing server.

[Fig. 10]

A flow chart illustrating an operation of a sheet defining terminal.

[Fig. 11]

A flow chart illustrating a process to be executed by a sheet definition data verifying terminal.

[Fig. 12]

A diagram showing a sheet management table.

[Fig. 13]

A diagram showing a charge table.

[Fig. 14]

A diagram showing management tables.

[Fig. 15]

A flow chart illustrating a process to be executed by a charge information managing server.

[Fig. 16]

A flow chart illustrating a process to be executed by a recognizing server.

[Description of Reference Numerals]

10, 11, 12 network

100 sheet definition data managing apparatus

101 sheet defining terminal

102 sheet definition data verifying terminal

103 sheet image managing server

104 sheet image database

105 image scanner

106 sheet definition data managing server

107 sheet definition database (master)

111 charge information managing server

200 sheet recognizing apparatus

201 recognizing server

202 sheet definition database (individual database)

203 sheet image processing terminal

204 image scanner

[Title of Document] Drawings

[Fig. 1]

FIG. 1

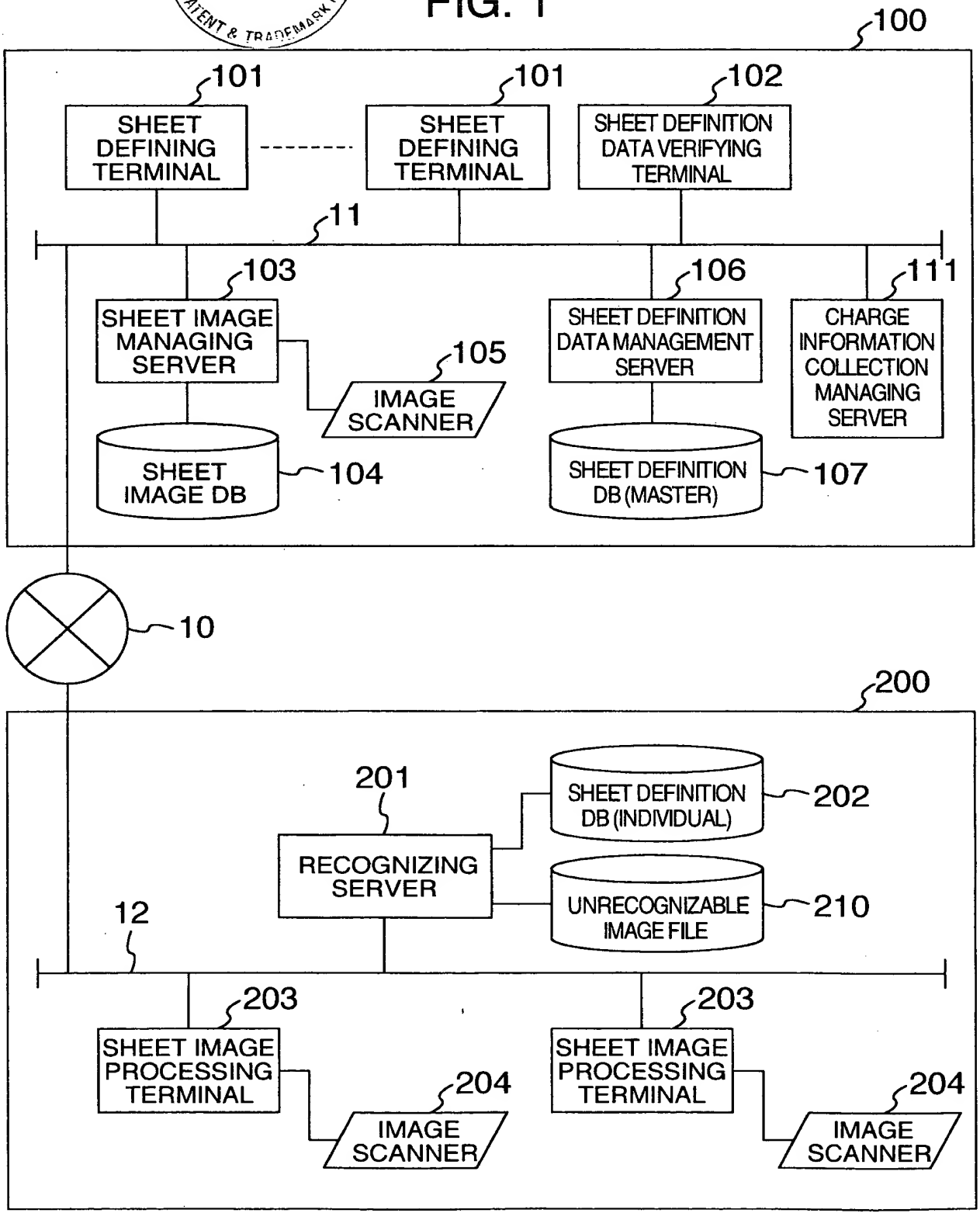


FIG. 2

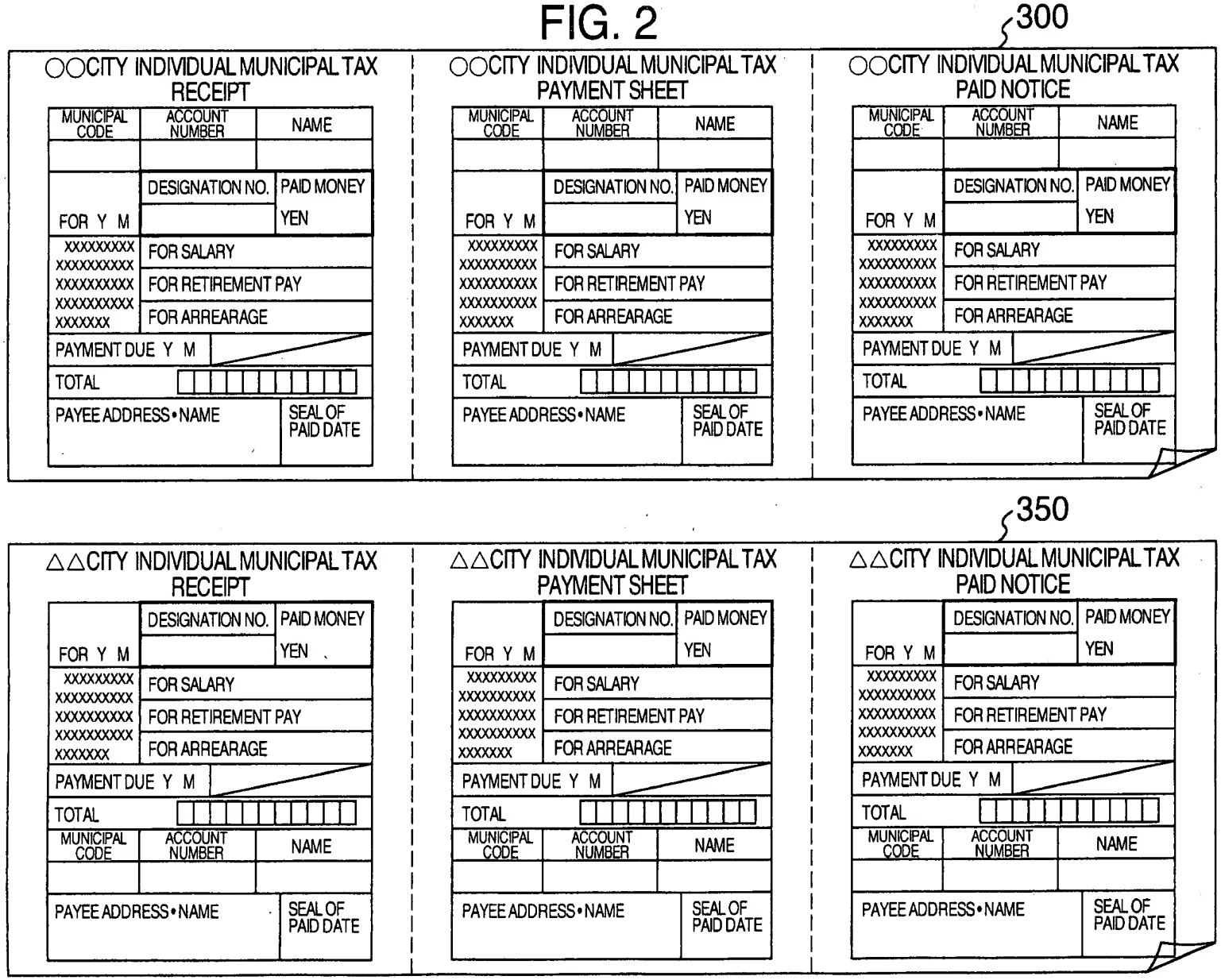
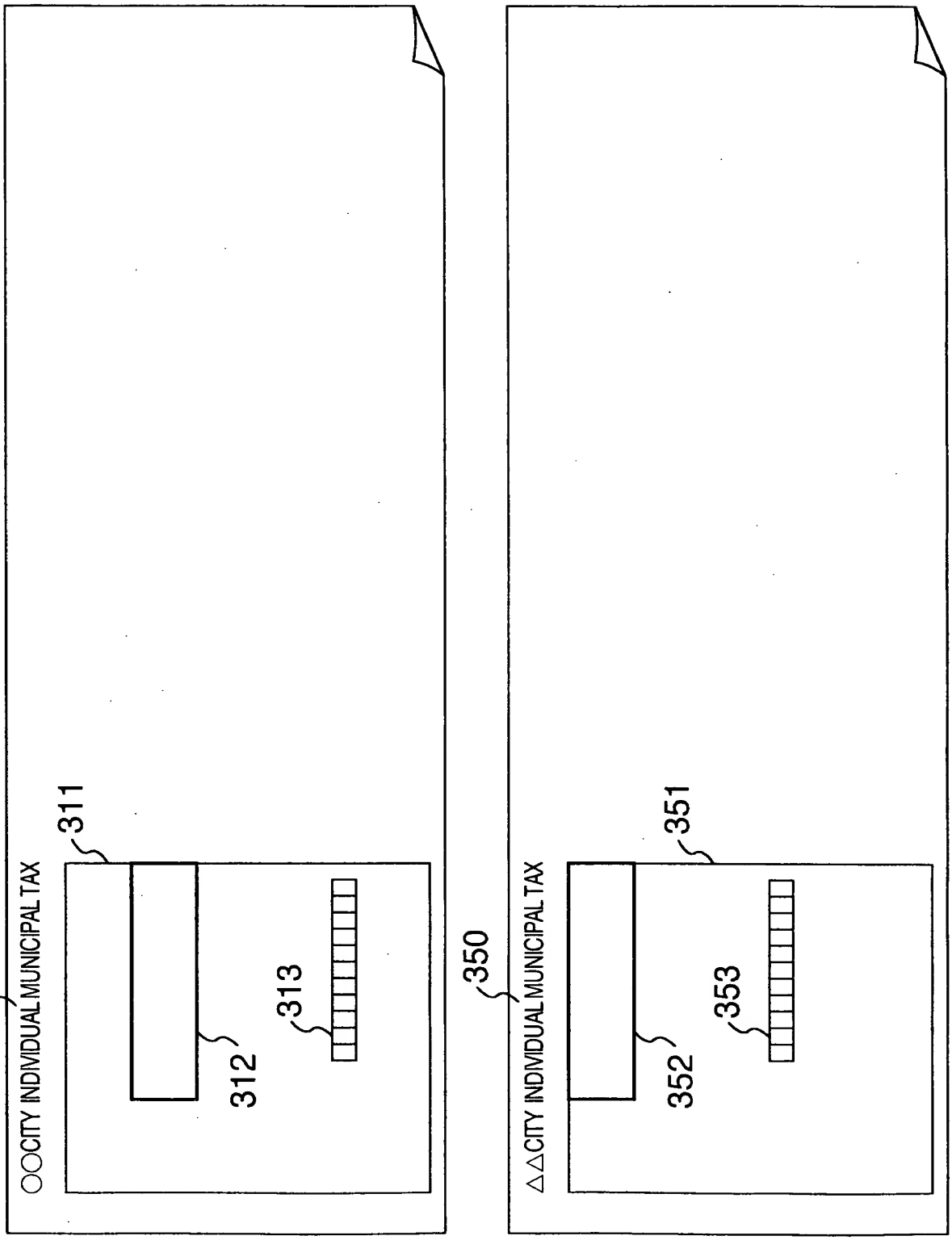


Fig. 21

[Fig. 3]

FIG. 3



[Fig. 4]

FIG. 4

410

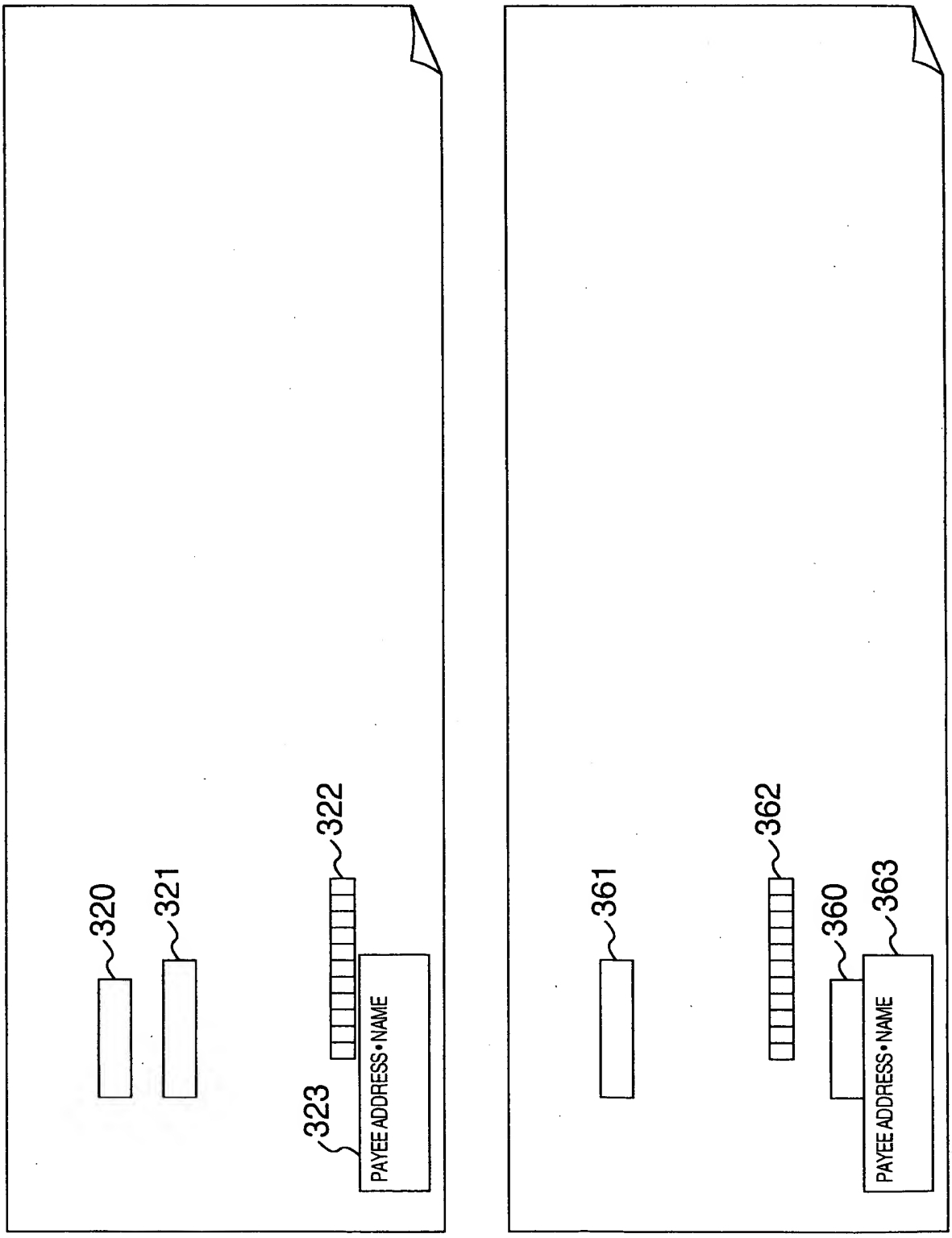
ITEM NAME		DATA
SHEET ID		Id-11
SIZE (x,y)		3000, 1200
CHARACTER 1	POSITION (x,y)	100,50
	CHARACTER STRING	○○CITY INDIVIDUAL MUNICIPAL TAX
RECTANGLE 1	START POSITION (x,y)	100,200
	END POSITION (x,y)	900,1250
RECTANGLE 2	START POSITION (x,y)	350,300
	END POSITION (x,y)	900,450
CONTINUOUS RECTANGLE 1	START POSITION (x,y)	450,800
	NUMBER OF CONTINUOUS RECTANGLES	11
	SIZE (x,y)	70,35

460

ITEM NAME		DATA
SHEET ID		Id-12
SIZE (x,y)		3000, 1200
CHARACTER 1	POSITION(x,y)	100,50
	CHARACTER STRING	△△CITY INDIVIDUAL MUNICIPAL TAX
RECTANGLE 1	START POSITION (x,y)	100,200
	END POSITION (x,y)	900,1250
RECTANGLE 2	START POSITION (x,y)	350,200
	END POSITION (x,y)	900,350
CONTINUOUS RECTANGLE 2	START POSITION (x,y)	450,700
	NUMBER OF CONTINUOUS RECTANGLES	11
	SIZE (x,y)	70,35

[Fig. 5]

FIG. 5



[Fig. 6]

FIG. 6

420

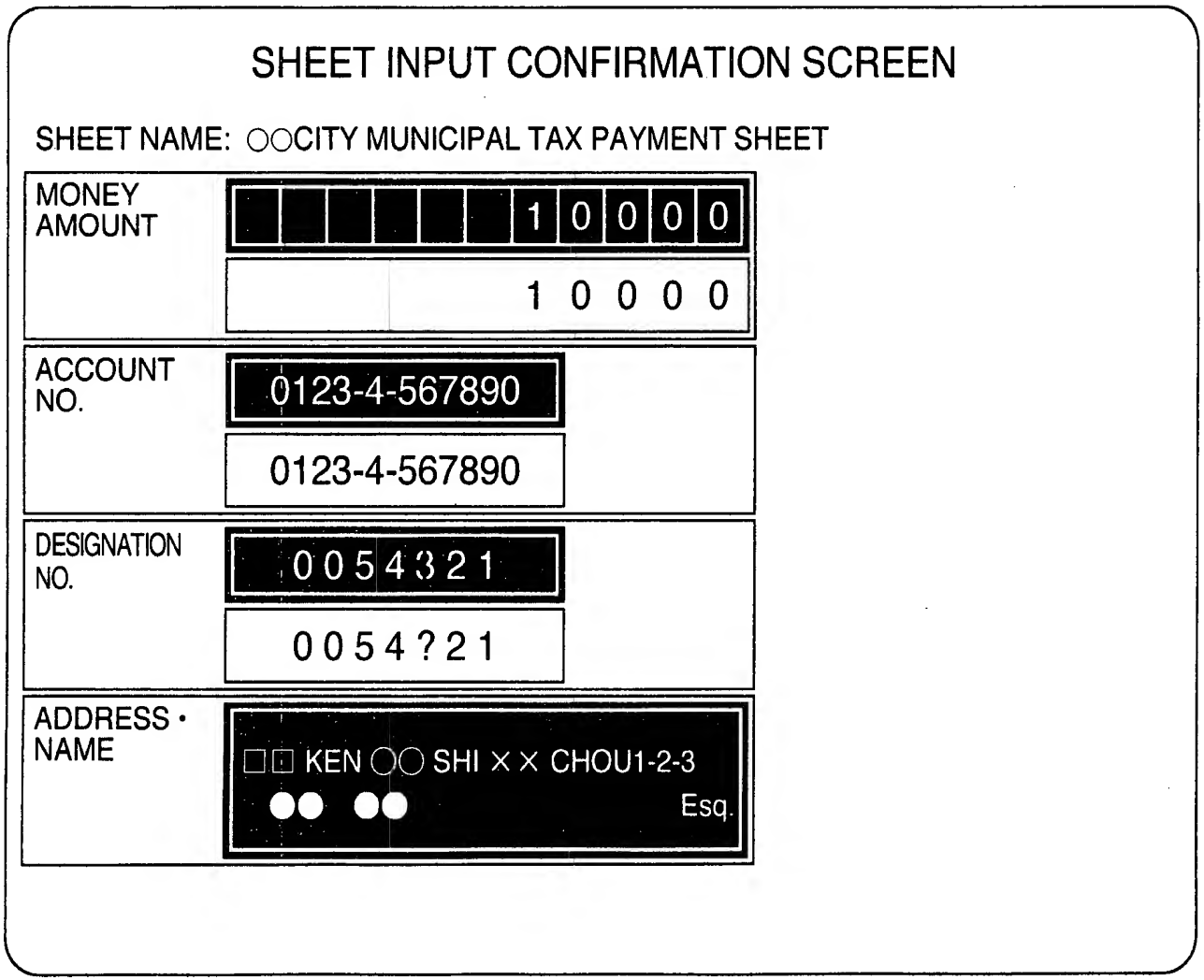
ITEM NAME			DATA
SHEET ID			1234567
FIELD 1	FIELD ATTRIBUTE		ACCOUNT NO.
	FRAME TYPE		FIELD FRAME
	START POSITION (x,y)		350,225
	FRAME SIZE		300,75
	FONT TYPE		NUMERAL
FIELD 2	FIELD ATTRIBUTE		DESIGNATION NO.
	FRAME TYPE		FIELD FRAME
	START POSITION (x,y)		350,375
	FRAME SIZE		350,75
	FONT TYPE		NUMERAL
FIELD 3	FIELD ATTRIBUTE		MONEY AMOUNT
	FRAME TYPE		CHARACTER FRAME
	START POSITION (x,y)		450,800
	FRAME SIZE		35,70
	FONT TYPE		NUMERAL
	NUMBER OF CHARACTERS		11
FIELD 4	FIELD ATTRIBUTE		ADDRESS NAME
	FRAME TYPE		FIELD FRAME
	START POSITION (x,y)		100,900
	FRAME SIZE (x,y)		600,250
	FONT TYPE		IMAGE ONLY
	PRE-PRINT (DELETE)	START POSITION (x,y)	100,900
		END POSITION (x,y)	400,50

FIG. 6 (Continued)

470

ITEM NAME			DATA
SHEET ID			1234567
FIELD 1	FIELD ATTRIBUTE		ACCOUNT NO.
	FRAME TYPE		FIELD FRAME
	START POSITION (x,y)		350,825
	FRAME SIZE		300,75
	FONT TYPE		NUMERAL
FIELD 2	FIELD ATTRIBUTE		DESIGNATION NO.
	FRAME TYPE		FIELD FRAME
	START POSITION (x,y)		350,275
	FRAME SIZE		350,75
	FONT TYPE		NUMERAL
FIELD 3	FIELD ATTRIBUTE		MONEY AMOUNT
	FRAME TYPE		CHARACTER FRAME
	START POSITION (x,y)		450,700
	FRAME SIZE		35,70
	FONT TYPE		NUMERAL
	NUMBER OF CHARACTERS		11
FIELD 4	FIELD ATTRIBUTE		ADDRESS NAME
	FRAME TYPE		FIELD FRAME
	START POSITION (x,y)		100,900
	FRAME SIZE (x,y)		600,250
	FONT TYPE		IMAGE ONLY
	PRE-PRINT (DELETE)	START POSITION (x,y)	100,900
		END POSITION (x,y)	400,50

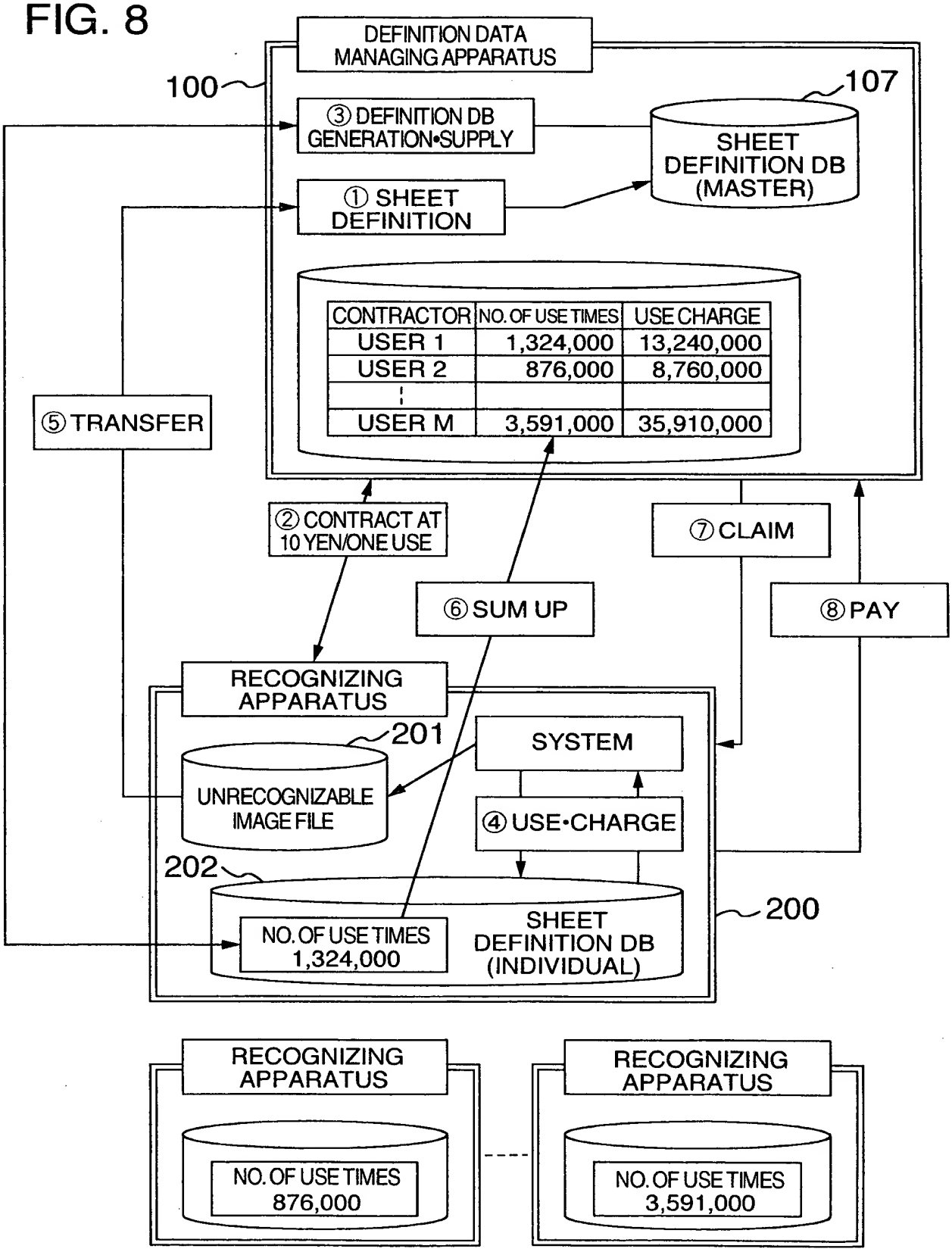
FIG. 7



[Fig. 7]

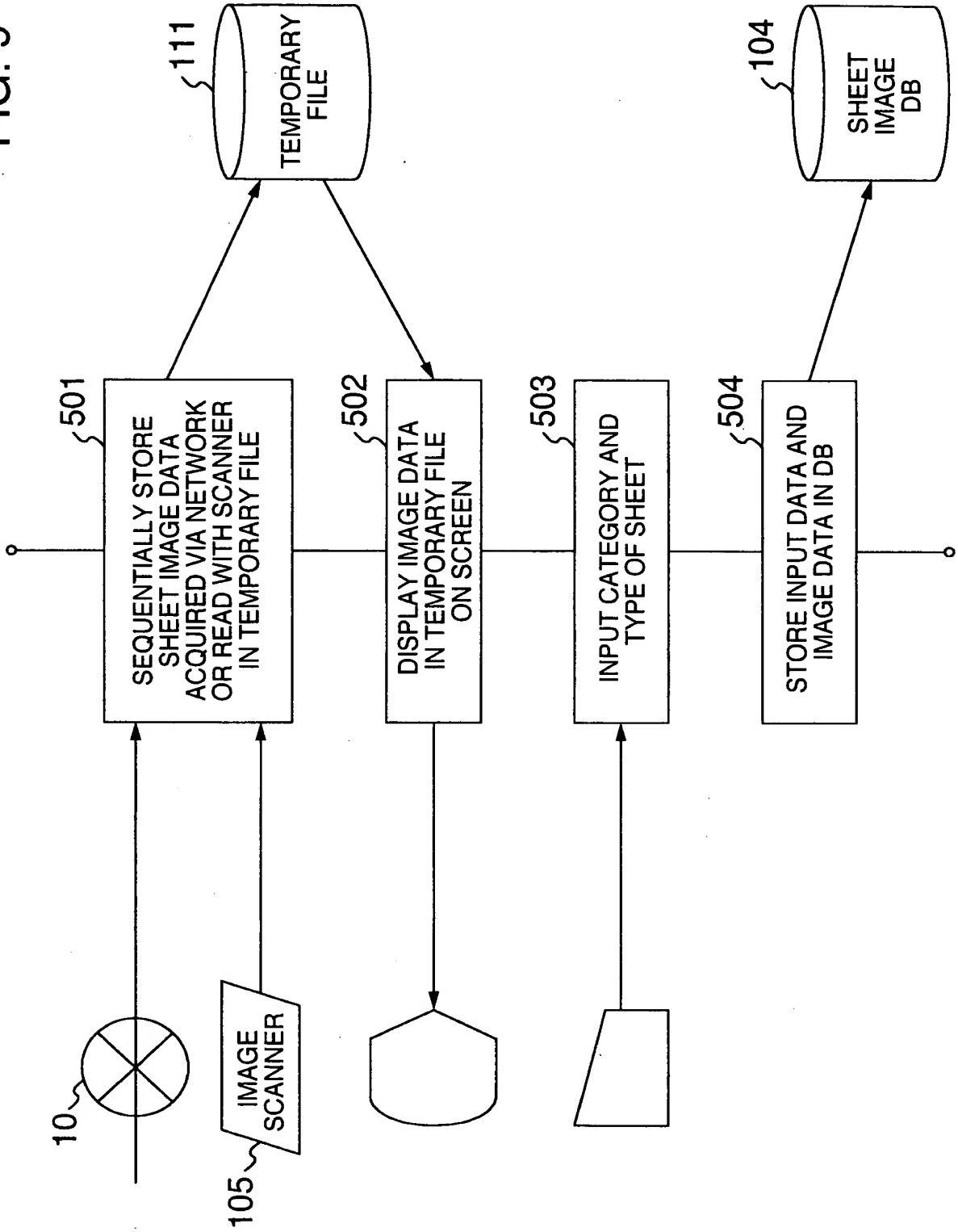
[Fig. 8]

FIG. 8



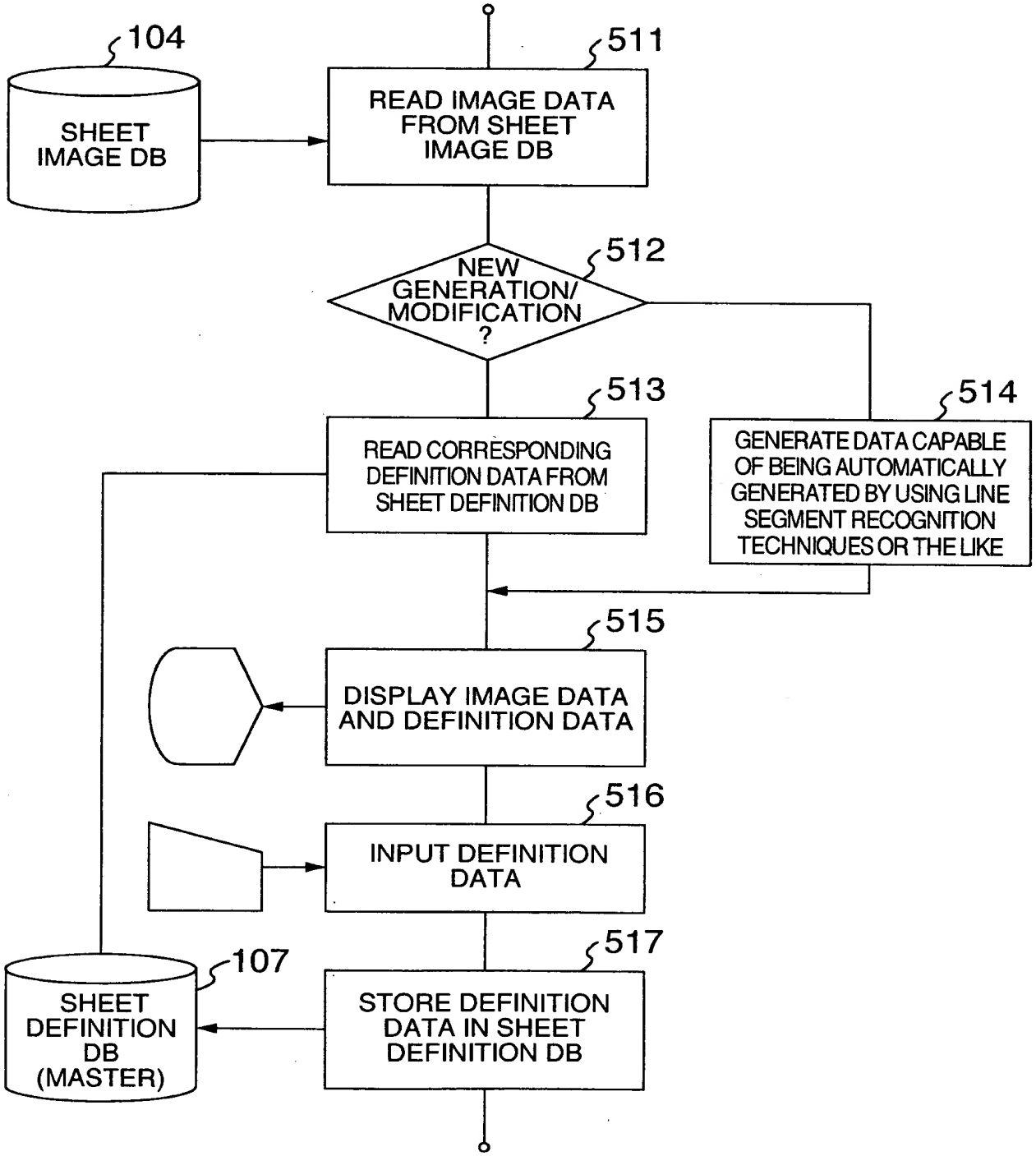
[Fig. 9]

FIG. 9



[Fig. 10]

FIG. 10



[Fig. 11]

FIG. 11

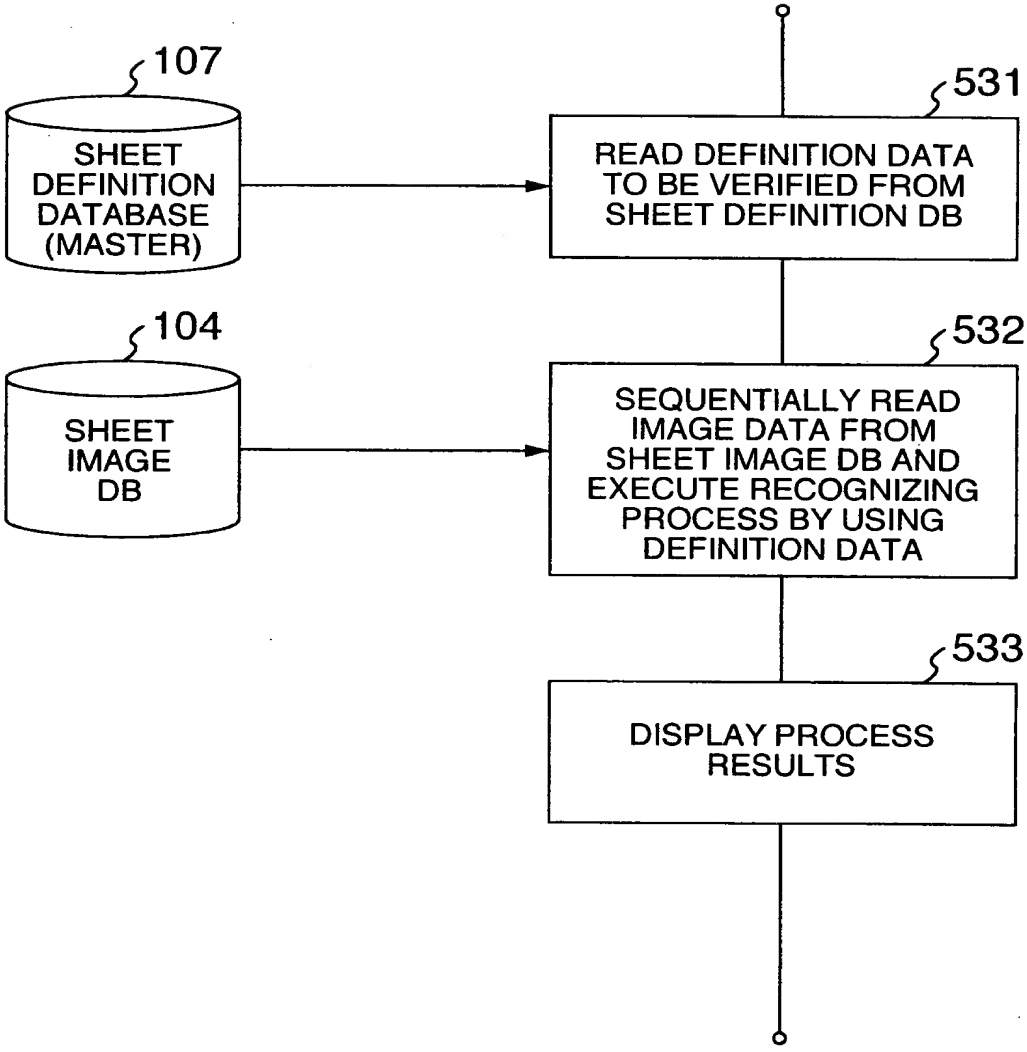


FIG. 12

450

CLASSIFICATION	SHEET NAME	SHEET ID	RECOGNIZING APPARATUS 1	RECOGNIZING APPARATUS 2	----------	RECOGNIZING APPARATUS N
INHABITANT TAX	○○ CITY MUNICIPAL TAX	Id-11	○	○		○
	△△ CITY MUNICIPAL TAX	Id-12	○	○		
	⋮	⋮				
	name-1i	Id-1i	○			○
CATEGORY 2	name-21	Id-21		○		
	name-22	Id-22		○		△
	⋮	⋮				
	name-2j	Id-2j		○		
CATEGORY 3	name-31	Id-31	○			○
	name-32	Id-32	○			
	⋮	⋮				
	name-3k	Id-3k	○			
CATEGORY 4	name-41	Id-41	△			
	name-42	Id-42	△			
	⋮	⋮				
	name-4m	Id-4m	△			
⋮						
CATEGORY N	name-N1	Id-N1		○		
	name-N2	Id-N2		○		
	⋮	⋮				
	name-Nn	Id-Nn		○		△

[Fig. 12]

[Fig. 13]

FIG. 13

470

SHEET ID	NUMBER OF USE TIMES
Id-11	1,150
Id-12	3,200
⋮	
Id-1i	2
Id-31	10,580
Id-32	830
⋮	
Id-3k	4,170
Id-41	26,180
Id-42	37,220
⋮	
Id-4m	8,640

[Fig. 14]

FIG. 14

610

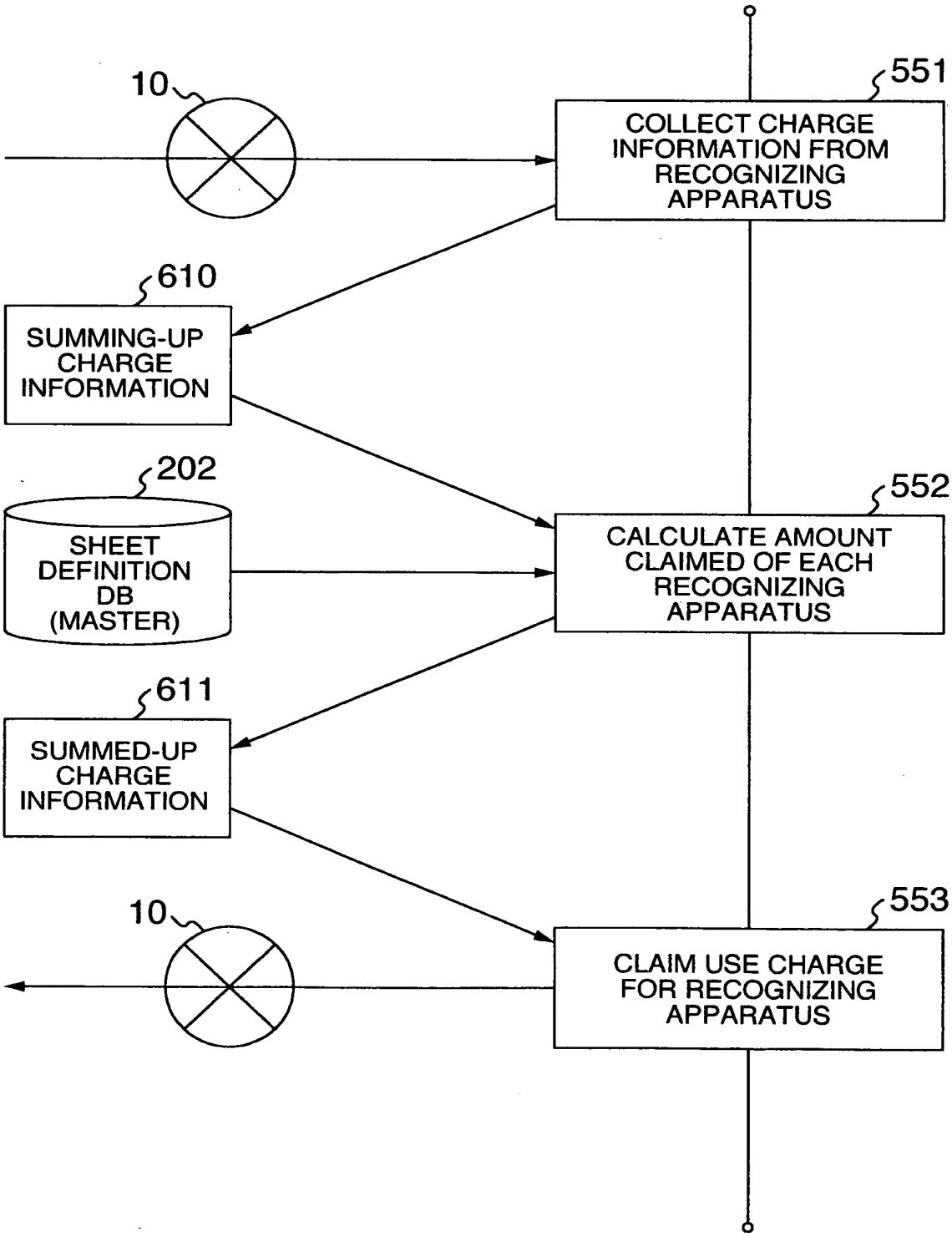
CLASSIFICATION	SHEET NAME	SHEET ID	RECOGNIZING APPARATUS 1	RECOGNIZING APPARATUS 2	------	RECOGNIZING APPARATUS N
INHABITANT TAX	○○ CITY MUNICIPAL TAX	Id-11	1,234	598		25
	△△ CITY MUNICIPAL TAX	Id-12	560	3,078		
	⋮	⋮				
	name-1i	Id-1i	32	407		77
CATEGORY 2	name-21	Id-21		1,885		
	name-22	Id-22		558		44,329
	⋮	⋮				
	name-2j	Id-2j		5,739		
CATEGORY 3	name-31	Id-31	4,100			37,210
	name-32	Id-32	987			
	⋮	⋮				
	name-3k	Id-3k	333			
CATEGORY 4	name-41	Id-41	676			
	name-42	Id-42	221			
	⋮	⋮				
	name-4j	Id-4m	2,001			
CATEGORY N	name-N1	Id-N1		11.673		
	name-N2	Id-N2		28.980		
	⋮	⋮				
	name-Nn	Id-Nn		68,231		7,468

611

		RECOGNIZING APPARATUS 1	RECOGNIZING APPARATUS 2	--------	RECOGNIZING APPARATUS N
TOTAL NUMBER OF USE TIMES		1,324,000	876,000		3,591,000
	CHARGED	1,012,000	876,000		2,591,000
	FREE	312,000	0		1,000,000
AMOUNT CLAIMED		10,120,000	8,760,000		25,910,000
SUMMING DATE		2000/4/1	2000/4/1		2000/4/1
DATE CLAIMED		2000/4/1	2000/4/1		2000/4/1
DATE OF PAYMENT		2000/4/20	2000/4/15		NOT YET

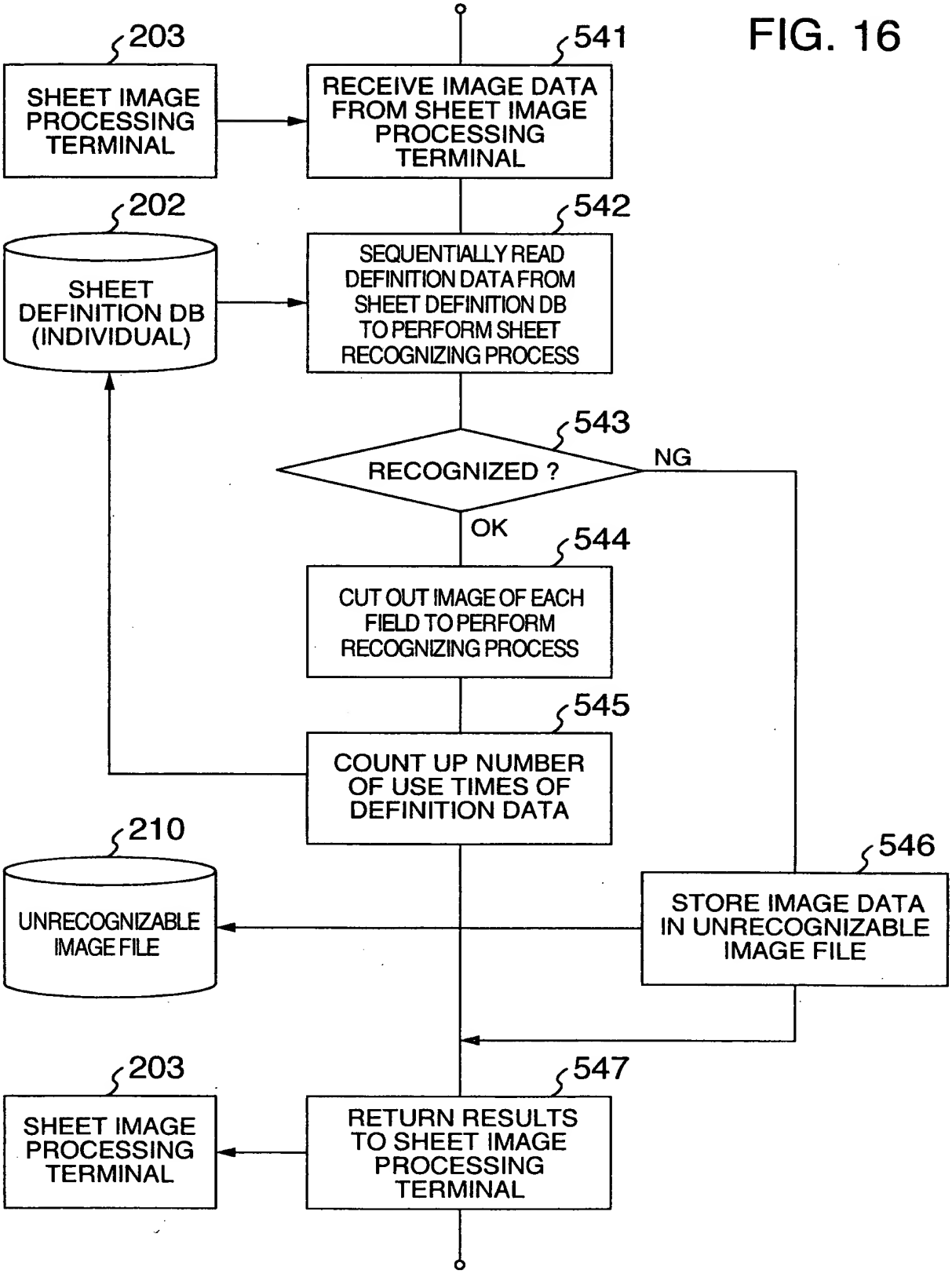
[Fig. 15]

FIG. 15



[Fig. 16]

FIG. 16



[Title of Document] Abstract

[Abstract]

[Problem] Sheet definition data stored in a sheet definition data managing apparatus is supplied, if necessary, to a sheet recognizing apparatus to reduce a configuration cost of a sheet definition database.

[Solving Means] There are provided: a sheet definition data managing apparatus 100 including a sheet definition data generating apparatus 101 for generating sheet definition data representative of a relation between a sheet writing position and written data and a charge managing apparatus 111 for claiming a charge in accordance with a use degree of the sheet definition data by a sheet recognizing and processing apparatus which will be described later; a communication network 10 for transmitting the sheet definition data managed by the sheet definition data managing apparatus 100 to the sheet recognizing and processing apparatus 200; and a sheet recognizing apparatus 201 for recognizing the type of the sheet by referring to the sheet definition data acquired via the network.

[Selected Drawing] Fig. 1